

LO-004

Composition of Confrontations in “An e-Japan System”

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The Network System for Basic Resident Registers¹ – or Juki-net, as it is commonly called – is a core system for the e-Japan strategy². It was constructed by the Ministry of Internal Affairs and Communications (MIC) to enable the identification of individual residents anywhere in Japan. It was intended to fulfill a similar function in local administration services to the employee database in private corporations. It is a very large-scale network computing system connecting 47 prefectures and more than 3000 municipalities. As such, it is the most important system to realize e-Government and e-Local Government, which are targets of the e-Japan strategy. In reality, the Juki-net is in danger of being ignored, if not forgotten, after being dogged by controversy before and after its introduction.^{3,4} Here, I would like to discuss the controversy, and offer some suggestions as to how Juki-net might be resurrected.

1. Juki-net and Juki-card: the system

The Juki-net was constructed to provide a standard for resident identification in governmental and municipal administration procedures. Its functions are regulated by the Revised Basic Resident Registers Law, proclaimed in August 1999. In the Juki-net, sixteen items of information are recorded, including name, present address, birthday, sex, relation to household head, date of latest moving, and resident code. The Juki-net records only six data items; name, address, birthday, sex, resident code and data history. Among these name, present address, birthday and sex constitute the ‘Basic Four Data’ because most individuals can be specified using this dataset. If two people with the same name, birthday and sex should live in same address, however, a Juki-code with eleven digits, created by a random process, is assigned to each resident.

The Juki-code provoked a fierce reaction in some quarters that the government was imposing an Orwellian system of state control. To allay Big Brother government control fears, the following assurances were given:

- 1) The Juki-code can be utilized only by governmental agencies specified in the Basic Resident Registers Law.
- 2) Use of the Juki-code for the collation of information on individuals is prohibited.
- 3) Use of the Juki-code by private companies is prohibited.

In terms of security, moreover, the system is advanced. Figure 1 shows a schema of the Juki-net. As mentioned, only six data from the Basic Resident Registers managed by cities/towns/villages are stored in the national center server via the communication servers in local government and prefecture servers. Each server is protected with a fire-wall checked 24 hours to prevent both illegal network access and physical attack⁵.

The Juki-card is one of the most advanced and secured smartcard systems based on the ISO standard. Its specifications include tamper resistance and firewalls between the application (AP) areas in the IC chip⁶. The functional construction of Juki-card is shown in Fig.2. In the Juki AP area, a Juki-code, password and symmetric cipher keys are stored. Those are used for resident identification of a resident or the issue of a Juki-card. By installing special AP software in the multiuse AP areas, furthermore, local governments can provide the additional services, such as for the reservation of public facilities, local currency for welfare services, etc..

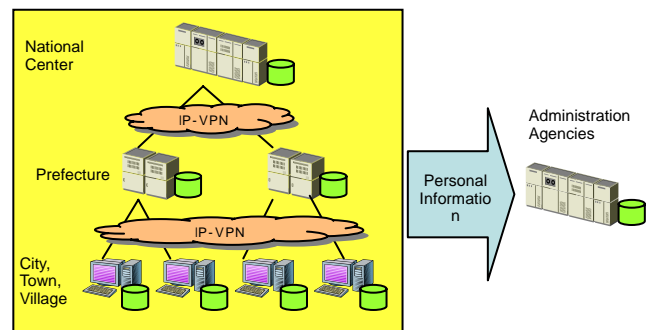


Fig.1 Configuration of Juki-net

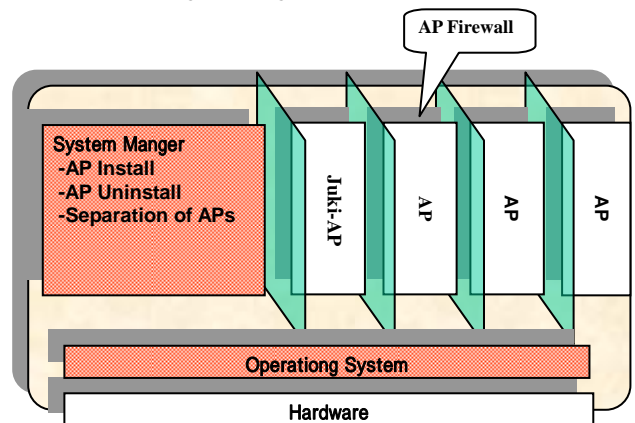


Fig.2 Configuration of Juki-card

2. Present status of the Juki-net

One year after the formal cutover on August 25th, 2003, the status and use of the Juki-net can be summarized as follows.

- 1) Among roughly 3000 local governments, three – Yamatsuri Town, Suginami Ward and Kokubunji City – refused to connect with the Juki-net. Suginami Ward, in fact, had undertaken litigation to secure the right to decide whether to register its Juki-dataset with the Juki-net.

- 2) A number of citizen's groups had also filed lawsuits seeking to prohibit the connection of local government resident register systems with the Juki-net.
- 3) Otherwise, utilization of Juki-net in Japanese government and local government administrative affairs had progressed steadily. In 2002, three e-government-related bills were passed in the National Diet which extended the use of Juki-net's ID data to 264 administrative procedures. Local government regulations, furthermore, were amended to enable the data to be used in 31 local procedures, such as address checks of taxpayers.
- 4) According to an article on the Mainichi Newspaper dated July 4th 2004, the number of cards issued Juki-card in all local governments was about 250,000 at the end of March, 2004, which was less than one tenth of MIC's target figure.

Regarding the security of Juki-net, whose apparent weaknesses or security holes had so concerned anti Juki-net groups, no incidents had been reported. System upgrading, including security patch and anti virus software installation, had been executed continually. Checklist-based system audits for system configurations and operation procedures had been performed in all local governments, and additionally penetration tests had been carried out to check the safety of network appliances⁷.

3. Confrontation between Stakeholders

Tensions over the construction and implementation of the Juki-net system have been alluded to. The major tensions have been between;

- 1) Juki-net promoters and anti Juki-net groups
- 2) Administrative agencies and residents

The former confrontations have been very intense, have attracted widespread media attention⁸, and have fanned tensions in the latter. In particular, disputes over Juki-net security between MIC and Nagano Prefecture were reported on television networks and major newspapers. While tensions between administrative agencies and residents have not attracted much media attention, they may in fact be more significant.

The problems with Juki-net, as expressed by the Anti National ID Forum and the Japan Federation of Bar Associations (*Nichibenren*) can be summarized as follows:

- Japanese residents should not be identified by Ju-ki codes;
- Juki-net and Juki-cards have fatal security problems;
- Cost-performance of Juki-net is poor. Merits for residents are not clear in spite of the huge expense.
- All personal information possessed by governmental agencies can be searched using the Juki-code;
- No legal system to manage large network systems like the Juki-net exists (sanctions against misuse are unclear,
- Local government has no right to control the Juki-net.

The key concerns boil down to protection of personal information (privacy) and security problems. Anti Juki-net campaigners assert that the introduction of a national ID system like the Juki-code constitutes an infringement of privacy by governments and governmental agencies, and hence it infringes on fundamental human rights. They have pursued this argument in the courts. It is often held as axiomatic, rather than open to

logical debate. On the other hand, privacy of personal information is already compromised to some degree, even for such opponents. Driver's licenses are demanded (and often photocopied) even when purchasing a cellular phone, and these show not only the name and address, but also the domicile and more information. The critical issue is how the government and local governments, private corporations or organizations and individuals handle such personal information from the viewpoint of 'fundamental human rights' and 'public welfare.'

Unfortunately, with regards the Juki-net, proponents have not devoted sufficient attention to allaying fears on these issues, and there has not been a constructive dialogue. In the absence of such a dialogue, emotions hold sway, as in the catch phrase: 'Humans are not lumps of beef. The numbering of residents by the government is not acceptable.'⁹

Concerns over security precede the first cutover on Aug. 5th, 2002. Many of the concerns are based on misapprehensions and a lack of technical knowledge, which have fed sensational articles in major newspapers. Mostly, such a misapprehension or a lack of technical knowledge was caused by the insincere behavior of MIC. Especially, the accountability on the Juki-net technology including its security by MIC has been thoroughly insufficient. As a result, it became widely believed that the Juki-net had a number of technically fatal security problems. The governor of Nagano Prefecture accused MIC about laxness over Juki-net security. This resulted in an open forum about Juki-net security between MIC and Nagano Prefecture, but both sides' opinions were entrenched and diametrically opposed.^{10,11,12} Such squabbles unfortunately substituted for reasoned debates about security for preventing fraud from the perspective of protecting personal information.

Prof. Takashi Kobayashi of Tokai University, who used to work in the Information Strategy Office of Yamato-shi, Kanagawa Prefecture, analyzed the situation of the Juki-card utilization in 248 cities with more populations of than 100,000. His report, which was uploaded on the *Nikkei-BP* portal site¹³ begins;

Not only has the Juki-card lost users, but it has already become a forgotten existence. It seems a midsummer night's dream, that sensational debate about the Juki-net raged between the anti Juki-net people and the Japanese government around the formal phase-in date of Aug.25th, 2003. The article by the Mainichi Newspaper on July 4th, 2004 which reported the number of Juki-cards issued at less than 250,000 – less than one-tenth of MIC's expectation – came as a shock to someone who had worked on the Juki-net in a local government. Since then, there has been silence. The news value of Juki-net seems to have become lower and lower. Even the anti Juki-net groups seem not so active in their objections to the Juki-card. Most local government workers who are directly involved in the Juki-card may feel that this quiet situation is better. Or, some local governments may claim that the MIC is in charge of issuing the Juki-card, and not them...

As this report suggests, the Juki-net/Juki-card is not widely accepted by residents. It is a fact, however, that the Juki-net has already become a mission critical system for many administrative agencies. As mentioned above, legislation in

2002 enabled the Juki-net to provide residents' ID data to central administrative agencies for 264 governmental administrative procedures, and through local-government regulations, 31 procedures in local government. While most residents are not conscious of it, the utilization of the Juki-net is being developed. This situation is similar to that of the employee database in corporations, which is an infrastructure of the information system for corporate activities, which employees are not conscious of in their ordinary work. They implicitly accept that personal information, including salary, health conditions, family, etc. are stored in it, and that the corporation can use them almost without any restrictions. Residents, on the other hand, do not necessarily accept such use of their personal information, even if it is strictly limited.

Comparisons may also be drawn between the Juki-code and the social security number in the United States. Legally, neither the Juki-code nor the social security number are 'National ID' numbers. According to Electronic Privacy Information Center (EPIC), most of American banks and credit card companies have created the customers database based on their social security numbers, and those data are sold illegally¹⁴. However, the social security number is accepted widely by U.S. citizen because it has been implemented to their daily life as an important social system. On the other hand, the Juki-code is the target of criticism, in spite of strict limitations to its use. Differences between the Juki-net and corporate databases and the social security number system should be elucidated.

Why is the social security number indispensable for US residents' daily life now? How about the Juki-net? Does the Juki-net only increase the efficiency of governmental agencies, or does it benefit residents as well? Answers to these questions, especially the last, may offer a key to the revival of the Juki-net.

4. Proposals for the Juki-net

As we have seen, the major issues raised by anti Juki-net groups revolve around privacy protection and Juki-net security. In fact, the latter is not really a technical issue. It is caused from a vague distrust of administration agencies. Moreover, this vague distrust has a close relationship to the privacy issue. Just after the first cutover, it was pointed out that a fatal mistake had been made in not disclosing sufficient information to residents on:

- Who can use ID data?
- How can it be used?
- When is it used?
- To whom is it sent?

As a result, the procedures were improved by making possible for residents to ask for disclosure of their Juki-net processing log information. Many residents, however, felt that this was not sufficient. Then what is necessary for residents to utilize the Juki-net in safety, comfort and convenience? A key concept is 'Self Control Rights of Personal Information.' This phrase appeared in 'Privacy Basics: The OECD Guidelines'¹⁵, and was

discussed in the National Diet deliberations over the law for protecting personal information. Nonetheless, only one aspect of 'self control rights of personal information' – the protection from illegal use of personal information by governments, organizations and corporations – has been emphasized.

The purpose of such rights is surely not only to restrict the use of personal information by others, but also to be able to utilize personal information for self benefit. Consider the following. Moving house involves not just administrative procedures, but many other time-consuming tasks as well, including notifying the new address to life-line services, credit card companies, banks and so on. Presently, it is prohibited for private corporations to use Juki-net information. If residents could update their data simply by giving permission for the Juki-net to send the relevant information to designated corporations, using their self control rights, however, the benefits would be remarkably increased. It would be extremely useful if this could be applied to the many procedures which require a domicile check.

Figure 3 shows a framework to realize the above-mentioned service. It is a C2G2B model, where the Juki-net data (G) is provided to the Private Corporation (B) under the control of Resident (C). Technically, this service may be realized by using "Single Sign-On", "Attribute Exchange" etc. determined in Liberty Alliance.¹⁶

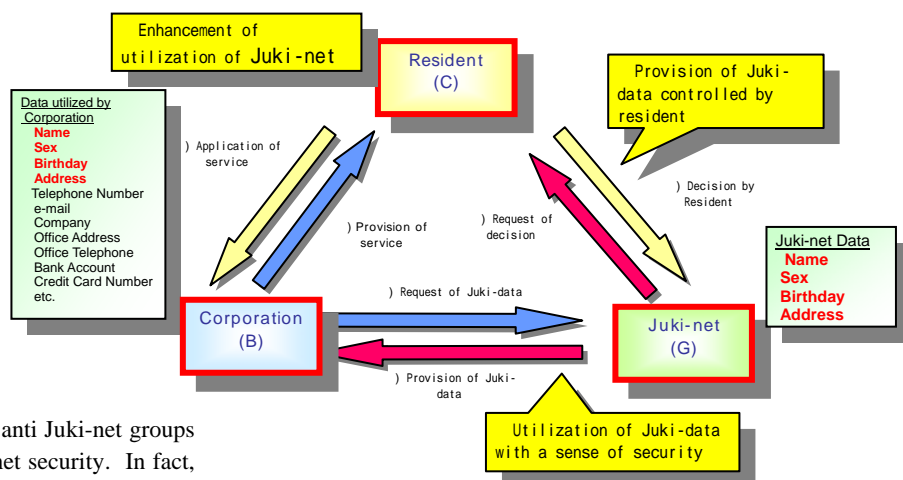


Fig.3 Service Model

Another approach to increase the benefits for residents is to deploy multi-purpose smart cards based on Juki-card technology. The Juki-card can be used as a multi-purpose smart card onto which software applications can be downloaded. Under the present framework, however, this is limited to services specified by local government regulations, and only local governments can issue cards which have Juki-card functions. But software for Juki-cards can be developed by anyone. As shown in Fig.2, the Juki-card has a very secure functional structure such as the application firewall. The Juki-AP software for Juki-services is completely separated from other applications, and no application shares data. Present regulations, though, do not permit the placement of Juki-AP data on private smart cards, even those which satisfy Juki-card specifications. Is this sensible?

A smart card boom has now come to Japan. Japan Railways East Corporation has issued about 10,000,000 smart cards. Tokyo Mitsubishi Bank has started a smart card bank service and other major banks are following. NTT Do-co-mo developed 'osaifu keitai' – a cellular phone with a smart card chip which enables cashless purchase and ticket reservation services. A huge number of corporations are adopting the smart ID card system.

Juki-cards have been issued to only 0.2% of the Japanese population, while issues of traffic cards, bank cards and corporate ID cards are mushrooming. Imagine if Juki-AP software was installed in corporate smart ID cards which could also be used for banking, credit and travel.

In short, a solution to the Juki-net and Juki-card impasse may be found not simply by pursuing 'self control rights of personal information' defensively, but also from the viewpoint of resident self-interest or utility.

5. Concluding comments

In this paper we looked at the clashes between Juki-net promoters and anti Juki-net groups, as well as administrative agencies and residents. These two confrontations expose a clash between technology solutions and administrative systems. In order to resolve this clash, and to bring about a revival of the Juki-net, two proposals were made. Technically, these two proposals are feasible, even at the present time, but they require additional administrative or legal measures.

Under the current framework, utilization of the Juki-net by private corporations is completely banned. And only local governments can issue Juki-cards. Juki-AP software can not be installed on private smart cards. Rather than allaying residents' fears of the Juki-net, such a situation may in fact intensify the vague sense of mistrust over the government's initiative by failing to demonstrate any direct utility to residents themselves. Rather than exacerbating residents' fears over security, conversely, relaxation of the regulatory framework – though not the security – might in fact demonstrate utility of the system, and ultimately allay many of the fears.

The MIC needs to reconstruct the Juki-net's institutional framework to maximize the residents' benefits by sharing the personal information under their self control rights, while providing a sense of security. There needs to be an active discussion involving both partners and opponents, and not merely squabbles.

As mentioned above, the Juki-net is based on the Revised Basic Resident Registers Law. In the National Diet deliberations for this law, the importance of the relationship between the Juki-net and the Personal Information Protection Act were recognized. However, handling of personal information in the Juki-net was hardly discussed at all as the scope of the Personal Information Protection Act itself was increasingly narrowed and its purpose changed. Even opponents of the Juki-net agree that some indications of personal information are necessary for daily living. If so, it is necessary to re-argue the following issues:

- How to handle Juki-net ID data among the government, local governments, public organizations, private corporations and

individuals from the viewpoint of 'fundamental human rights' and 'public welfare.'

- How to protect the Juki-net ID data and the Juki-net system technically and operationally.

Unfortunately, however, the barren arguments still continue.¹⁷ MIC is to blame for the greater part of them. Residents are gazing at the argument between MIC and the anti Juki-net groups. MIC should argue with them positively and productively. Target for MIC to let the importance of the Juki-net is residents beyond them. The confrontations observed with the implementation of the Juki-net are in fact observed in almost every e-Japan program. The e-Japan Strategy has been highly rated because of the large increase of broadband and mobile internet subscribers. But effective IT utilization was given a very low evaluation by the Expert Committee on IT Strategy Evaluation in March 2004.¹⁸ Concerning the promotion of e-Government and e-Local Government, especially, this Committee cited not only low utilization of the e-Government portal site for e-applications and e-notifications by residents and corporations, but also low user satisfaction. Japanese residents and corporations, it concluded, have not been able to reap the full benefits of the IT revolution. The increase in broadband use can hardly be attributed to government initiative. It is more due to the huge increase of ADSL subscription carried out by private companies like Yahoo BB which was able to catch the user needs. Parallels between the e-Government/e-Local Government systems ignored by residents and the notorious public-works schemes – highways in particular – in under-populated areas where 'the number of cars is less than the number of bears' (a famous quip¹⁹ from the highway Authority privatization debate. The reason is clear. Pushing supply-side logic and blindly believing in the efficiency of technology without having to modify local government systems produces similar results. In order to maximize residents' benefits, the policy making process should be converted to a demand-based logic, and harmony between technology solutions and administrative systems pursued from this perspective.

¹ <http://www.soumu.go.jp/english/c-gyousei/index.html>

² http://www.kantei.go.jp/foreign/it/network/0122full_e.html

³ <http://www.japantimes.co.jp/weekly/ed/ed20030705a1.htm>

⁴ http://www.nichibenren.or.jp/jp/katsudo/sytyou/kaityou/00/2002_8.html

⁵ <http://www.soumu.go.jp/c-gyousei/daityo/>

⁶ MIC notification No.392 on May 5th, 2003

⁷ <http://www.soumu.go.jp/c-gyousei/daityo/>

⁸ See Yahoo

[index\(http://dailynews.yahoo.co.jp/fc/domestic/resident_register_network/\)](http://dailynews.yahoo.co.jp/fc/domestic/resident_register_network/)

⁹ Trace-ability of beef in Japan is controlled by a ten-digit number.

¹⁰ <http://www.soumu.go.jp/c-gyousei/daityo/>

¹¹ <http://www.pref.nagano.jp/keiei/seisakut/happyou/kaiken/s-kaiken.htm>

¹² <http://internet.watch.impress.co.jp/static/column/jiken/2004/01/21/>

¹³ <http://premium.nikkeibp.co.jp/e-gov/special/2004/sp040901main.shtml>

¹⁴ <http://www.epic.org/>

¹⁵ http://www.oecd.org/document/18/0,2340,en_2649_34255_1815186_1_1_1_1,00.html

¹⁶ <http://www.projectliberty.org/>

¹⁷ <http://www.computerworld.com/securitytopics/security/story/0,10801,97600,00.html>

¹⁸ <http://www.kantei.go.jp/jp/singi/it2/hyouka/dai4/4siryou1.pdf>

¹⁹ "On a highway in Hokkaido which was built by the favor of a politician, a traffic accident occurred between a car and a brown bear. When investigated, it became clear that the number of a bear crossing that highway is more than the number of a car running on that highway" spoken by Mr. Nobuteru Ishihara, Minister of Land, Infrastructure and Transport, at a town meeting held on Nov. 2001